Frequently Asked Questions Regarding Large Groundwater Withdrawal Permitting in New Hampshire

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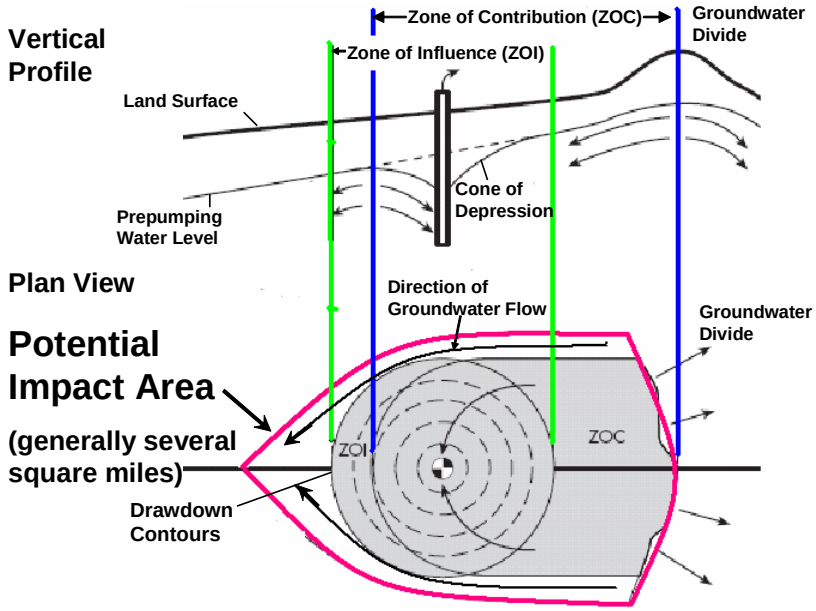

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FAQs Regarding Large Groundwater Withdrawal Permitting

Large groundwater withdrawal permitting is regulated under State law (RSA 485-C, Groundwater Protection Act) and New Hampshire Department of Environmental Services Administrative Rules *Env-Ws 388 Major Groundwater Withdrawal.* Answers are provided below to frequently asked questions regarding large groundwater withdrawal permitting in New Hampshire.

The following topics are covered:

Permit Process

1) How much water must be pumped from a well to be considered a large withdrawal and require a large groundwater withdrawal permit?

A large groundwater withdrawal means any withdrawal from groundwater of 57,600 gallons or more of water in any 24-hour period at a single property or place of business (RSA 485-C:, IX-a — see www.gencourt.state.nh.us/rsa/html/L/485-C/485-C-2.htm). Any large groundwater withdrawals at a property or place of business from wells sited after July 1998 require a large groundwater withdrawal permit. The definition of "large groundwater withdrawal" in the Groundwater Protection Act requires that DES consider the cumulative withdrawal volume from all wells sited after July 1998 at a property or place of business.

2) What is the purpose the large groundwater withdrawal permitting process?

The purpose is to ensure that no adverse impacts to water users or water dependant natural resources occur as a result of a new large groundwater withdrawal established after July 1998. Adverse impacts are defined in the Groundwater Protection Act as the following (from RSA 485-C:21 V-c):

(a) Reducing the withdrawal capacity of a private water supply well of a single residence as a result of the reduction of available water that is directly associated with the withdrawal as determined by the following:

(1) Any reduction in capacity for wells with a capacity less than water well board recommended optimum minimum flow capacity of 4 gallons per minute for 4 hours before the

withdrawal;

(2) Any reduction in capacity below 4 gallons per minute for 4 hours, for wells that had a capacity greater than 4 gallons per minute for 4 hours, before the withdrawal; or

(3) A reduction in capacity where the well still has a capacity between 4 gallons and 10 gallons per minute for 4 hours and the user provides information indicating that the reduction in flow has resulted in the inability to meet his or her water needs;

(b) Reducing the capacity of a public drinking water supply below the minimum withdrawal rates required per consumer determined by the following:

(1) Minimum daily amounts of drinking water shall be determined per use based on the design flow criteria established for public water supply systems established in rules adopted by the department; or

(2) Where it is verified that such wells were unable to produce the design flow before the withdrawal began, the adverse impact shall be any reduction in the ability to produce water;

(c) Reducing the capacity of a water supply that is used for a multiple unit dwelling residence, but that is not a public water supply, that results in the inability to continue established activities or maintain existing water capacity requirements;

(d) Reducing the capacity of a private, non-residential, non-drinking water supply that results in the inability of a commercial, industrial, agricultural, or retail facility to continue established services or production volumes;

(e) Reducing the ability of a registered water user to produce volumes equivalent to the average daily withdrawal for a specific calendar month as determined by discharge measurements and reports made to the department in accordance with the water user requirements under RSA 488 or other previous water use reporting requirements of the department;

(f) Reducing surface water levels or flows that will, or do, cause a violation of surface water quality rules adopted by the department;

(g) Causing a net loss of values for submerged lands under tidal and fresh waters and its wetlands as set forth in RSA 482-A;

(h) Causing the inability of permitted surface water or groundwater discharges to meet permit conditions;

(i) Reducing river flows below acceptable levels established pursuant to RSA 483;

(j) Causing the contamination of groundwater obtained from wells or surface waters from contaminated groundwater whose flow has been altered by the withdrawal, or causing the contamination of an aquifer or contributing to the spread of any existing contamination;

(k) Causing the long-term predictable rate of replenishment of the aquifer that is the source of the withdrawal to be exceeded.

3) How many years is the large groundwater withdrawal permit valid?

The term of a groundwater withdrawal permit is ten years. However, by law and rule DES has authority to revoke or modify the permit at any time to prevent adverse impacts from occurring. Modification of the permit may include changing the locations of environmental monitoring points, changing the frequency of

monitoring, or revising the permitted production volume of the wells. By rule, the permitted production volume cannot exceed the production volume demonstrated during withdrawal testing (pumping test). At the end of ten years, the permit must be renewed, by completing the entire permitting process again.

4) What is the appeal process if an entity disagrees with the final decision issued by the state regarding a large groundwater withdrawal permit?

The large groundwater withdrawal statute RSA 485-C:21, as amended by House Bill 69 effective August 30, 2005, and SB 386 of 2006 effective August 21, 2006 states that "Decisions of the department may be appealed in accordance with RSA 21-O:7,IV." RSA 21-O:7,IV states that "The water council shall hear and decide all appeals from department decisions relative to the functions and responsibilities of the division of water other than department decisions made under RSA 482-A relative to wetlands, in accordance with RSA 21-O:14." Pursuant to RSA 485-C:21, VI(b), any party shall have the right to appeal from the decision of the water council to the superior court of the county in which the large groundwater withdrawal is to be made to determine the validity and the reasonableness of the department's action on the permit. The appeal shall be filed within 60 days after the decision of the water council. The appeal shall suspend the decision of the department pending the outcome of a preliminary hearing. The appeal, so far as practicable, shall have precedence over other actions in the same court.

5) How will the state monitor the withdrawal volumes at the site to ensure that the permitted production volumes are not exceeded?

All new permitted large groundwater withdrawals must be metered in accordance with RSA 488:4, Env-Ws 388.04(e)(17)f and Env-Ws 390.04. DES will conduct inspections to ensure metering is occurring. DES has access to a non-intrusive meter, which may be used to assess withdrawal volumes, and provide DES with the means to evaluate whether these volumes exceed the permitted production volume.

6) What happens to the withdrawal permit should the facility be transferred to a new owner?

At all times, the owner of the large withdrawal is legally responsible to maintain the conditions of the large groundwater withdrawal permit. If ownership of the facility is transferred, the permit holder must notify DES in writing, and the large groundwater withdrawal permit would be modified accordingly, transferring it to the new owner.

7) I am concerned that a withdrawal owner may not remain financially solvent. How can I be assured that if adverse impacts occur, the owner will have the financial resources necessary to mitigate these impacts?

The primary purpose of the large groundwater withdrawal law and associated regulations is to avoid the occurrence of adverse impacts prior to a permit being issued. So typically, the proposed large groundwater withdrawal would be prohibited or reduced in volume should environmental monitoring data, collected as part of withdrawal testing, reveal that adverse impacts may occur.

For example, if a permitted large withdrawal were impacting a pre-existing water user's water availability, and the large water user causing the adverse impact stated that they could not afford monetarily to mitigate that impact, then the permit for operating the large withdrawal would be immediately revoked and the withdrawal would have to cease. Terminating the large withdrawal would effectively mitigate the water availability problem caused by the withdrawal.

In terms of water quality impacts, a large withdrawal would not be allowed or would be terminated if it were adversely moving or spreading contamination (RSA 485-C:21,V-c(j) - see www.gencourt.state.nh.us/rsa/html/L/485-C/485-C-21.htm). Because of the state's wellhead protection requirements, better water quality is generally associated with new withdrawals that are developed for drinking water. This is because the state and water suppliers (bottled or community systems) are very active in educating landowners in wellhead protection areas about the importance of the proper use and disposal of hazardous waste. Furthermore, many water suppliers are required to conduct surveys in the wellhead protection area to identify and remedy any activities that may adversely impact water quality.

For sites that are known to be contaminated, DES's Waste Management Division maintains project files that summarize site investigations and remediation activities that have occurred to date. This information provides a partial basis for a technical determination as to how the proposed withdrawal may affect water quality.

If a private well's water quality is impacted by a large withdrawal's effect on contaminants released into the ground, both the permittee of the large withdrawal, and the party responsible for the contaminant release would be responsible for mitigating these impacts. Any entity illegally discharging hazardous materials is financially obligated to remediate impacts.

It has been requested in several instances that DES require a permittee to obtain bonding or insurance. DES does not have statutory authority to require bonding or insurance be obtained. However, the process for identifying, assessing and addressing impacts described above is effective in ensuring adverse impacts do not occur.

8) Please provide the time line for the large groundwater withdrawal permitting process.

The permitting process generally takes eighteen months to complete. The following summarizes the **typical** timeline for the large groundwater withdrawal permitting process when public hearings are requested:

(a) Applicant submits a complete Preliminary Permit Application to DES and conducts public notification. Municipalities and community water suppliers have 15 days to contact DES and request a public hearing (15 days).

(b) DES conducts a public hearing, if requested (30 days).

(c) DES provides comments on the adequacy of the Preliminary Permit Application including the withdrawal testing design after the 45-day written comment period, which follows a public hearing (60 days).

(d) Applicant submits a revised Preliminary Permit Application and conducts withdrawal testing and impact assessment (90 to 120 days).

(e) Applicant develops a complete Final Report (90 days).

(f) Applicant submits a complete Final Report to DES and conducts public notification. Municipalities have 15 days to contact DES and request a public hearing (15 days).

(g) DES conducts a public hearing, if requested (30 days).

(h) DES provides comments on the adequacy of the Final Report after the 45-day written comment period, which follows the public hearing (60 days).

(i) Applicant develops and submits a revised Final Report to DES (45 days).

(j) DES issues a Final Decision (45 days).

9) What would prevent the applicant from constructing new withdrawals, in addition to permitted withdrawals, at a later date?

The applicant would have to complete the entire large groundwater permitting process again (public notification, impact assessment, etc.) if they were to ever propose developing new withdrawals on the same property or place of business or increasing permitted production volumes of the existing withdrawals. The permitting process would require that the applicant assess the cumulative impact of all existing and proposed withdrawals.

10) What materials are available for review during the large groundwater withdrawal permitting process? How can an individual obtain access to these materials for review?

If the applicant moves forward through the permitting process, the following materials associated with the permitting process are made available by DES for review:

(a) Preliminary Permit Application – This document is prepared by the applicant to provide preliminary information required to obtain a large groundwater withdrawal permit. It typically contains a withdrawal testing program proposal.

(b) Public comments submitted to DES, if any.

(c) DES's comments concerning the Preliminary Permit Application.

(d) Revised Preliminary Permit Application or supplemental information document, if needed – This document is prepared by the applicant and contains responses to DES comments and supplemental information, as required, to revise the Preliminary Permit Application.

(e) Final Report – This document is prepared by the applicant to provide required additional information, including the results of the withdrawal testing, to obtain a large groundwater withdrawal permit.

(f) DES's comments concerning the Final Report.

(g) Revised Final Report or supplemental information document, if needed – This document is prepared by the applicant and contains responses to DES comments and supplemental information, as required, to revise the Final Report.

(h) Final Decision on the Permit Application – Permit Issued or Permit Denied. DES will issue a Final Decision document within 45 days of receipt of a complete Final Report.

(i) Decision Statement, if needed – DES will issue a Decision Statement document that serves as the basis for the Final Decision.

DES is available to coordinate with local representatives and applicants and schedule public information meetings throughout the permitting process. Furthermore, if local representatives wish to provide written comments on future project documents, DES will provide these representatives with an opportunity to do so, and indicate when these comments need to be submitted to DES such that local input can be included prior to the dates for DES to respond to permit submittals. State law (RSA 485-C:21, II) requires that DES and the applicants provide copies of all mailed correspondences to communities within the potential impact area of the withdrawal.

11) How is the Demonstration of Need determined by DES? Bottled water withdrawals are not necessarily needed.

State law (RSA 485-C:4, XII, b) relates the "Demonstration of Need" specifically to a water user planning for and implementing water conservation techniques when developing a new large groundwater withdrawal. The law does not provide DES with the authority to make judgments about the type of water use, beyond ensuring that the requested permitted production volume is utilized in an efficient manner for its intended purpose. Water efficiency is further ensured by RSA 485.61 and Env-Ws 390 which stipulate water conservation requirements for new sources of water permitted by DES.

12) What is the size of groundwater withdrawals in the state?

The number and size of registered groundwater withdrawals from wells in New Hampshire as of 2006 is summarized below. The statistics represent average withdrawal volumes and not maximum withdrawal volumes.

Number of Groundwater Withdrawals	Average Withdrawal Volume gallons per day (gpd)
32	20,000 to 100,000 gpd
33	100,000 to 200,000 gpd
33	200,000 to 300,000 gpd
16	300,000 to 400,000 gpd
13	400,000 to 500,000 gpd
33	Greater than 500,000 gpd

Note: Where multiple groundwater withdrawals exist at a single property of place of business, the cumulative volume of groundwater is reported.

Existing Wells

13) Which private wells will be monitored during withdrawal testing? How do I get my well monitored?

The applicant is responsible for establishing an inventory of private wells located in the vicinity of the proposed withdrawal according to the regulations. From this inventory, the applicant is required to identify wells that will be monitored during withdrawal testing. DES will indicate to the applicant if the monitoring well selection is adequate for impact assessment. An adequate impact assessment program includes a monitoring well network that is representative of all existing wells. This is accomplished by selecting monitoring wells that are located in the same aquifer as and at depths similar to the other private wells. Additional considerations include the orientation of the wells to the proposed withdrawal site and distance of the well from the withdrawal site. The location of the monitoring wells in the network should extend out several thousand feet from the site, such that wells are located both inside and outside the area of groundwater estimated to be influenced by the proposed withdrawal. By rule (Env-Ws 388.09(j)), all water supply wells within 1000 feet of a proposed withdrawal must be monitored unless the property owner denies access.

14) Are the adverse impact criteria established for new large groundwater withdrawals adequate for protecting low yielding residential wells?

State law stipulates specific criteria to ensure that low-yielding wells are protected. **Any** reduction in the capacity of a low yielding well that is caused by a large groundwater withdrawal is considered to be an adverse impact that must be mitigated.

The specific statutory criteria for determining adverse impacts to private wells (low and high-yielding wells) are summarized as follows:

From RSA 485-C:21,V-c:

> V-c. In order to preserve the public trust, no large groundwater withdrawal shall cause an unmitigated impact as determined by the following:
>
> (a) Reducing the withdrawal capacity of a private water supply well of a single residence as a result of the reduction of available water that is directly associated with the withdrawal as determined by the following:
> (1) Any reduction in capacity for wells with a capacity less than water well board recommended optimum minimum flow capacity of 4 gallons per minute for 4 hours before the withdrawal;
>
> (2) Any reduction in capacity below 4 gallons per minute for 4 hours, for wells that had a capacity greater than 4 gallons per minute for 4 hours, before the withdrawal; or
>
> (3) A reduction in capacity where the well still has a capacity between 4 gallons and 10 gallons per minute for 4 hours and the user provides information indicating that the reduction in flow has resulted in the inability to meet his or her water needs;

15) Are the adverse impact criteria protective of private wells associated with commercial, industrial or agriculture? Our town is a rural community, and homeowners may have water needs that are not typical of other New Hampshire communities.

The large withdrawal regulations are protective of homeowners who utilize water for more than just domestic purposes or for instances where multiple houses share a well. For example, RSA 485-C:21,V-c(a)(3), stipulates that a private water supply well may not be reduced below 10 gallons per minute if information is provided that indicates that a reduction in flow has resulted in the inability to meet the well user's water needs. A well with a capacity of 10 gallons per minute converts to a daily production capacity of approximately 14,500 gallons. A typical homeowner uses a few hundred gallons of water a day, and homes with extensive outdoor watering needs may use up to 2,000-3,000 gallons of water a day. For example, RSA 485-C:21,V-c(a)(3):

> If a private water supply is utilized for another type of use such as (but not limited to) a business or agriculture, then the large withdrawal regulations include a broader definition of adverse impact in RSA 485-C:21,V-c,(c)-(e) provided below:
>
> V-c. In order to preserve the public trust, no large groundwater withdrawal shall cause an unmitigated impact as determined by the following:
>
> (c) Reducing the capacity of a water supply that is used for a multiple unit dwelling residence, but that is not a public water supply, that results in the inability to continue established activities or maintain existing water capacity requirements;
>
> (d) Reducing the capacity of a private, non-residential, non-drinking water supply that results in the inability of a commercial, industrial, agricultural, or retail facility to continue estab-

lished services or production volumes;

(e) Reducing the ability of a registered water user to produce volumes equivalent to the average daily withdrawal for a specific calendar month as determined by discharge measurements and reports made to the department in accordance with the water user requirements under RSA 488 or other previous water use reporting requirements of the department;

16) Will a well owner response policy be developed? If so, who will be protected by this?

The term "Well Owner Response Policy" is an artifact of what large water users sometimes developed and implemented prior to July 1998, when state law did not specifically protect existing water users. Policies of this type were sometimes developed independently between a new large water user and area residents, and contained measures that a new large water user agreed to implement if their new withdrawal impacted area wells. Since July 1998, state law (RSA 485-C) does not allow any new large withdrawal to adversely impact existing water users, so this type of agreement is not necessary to ensure existing water users are protected.

A mitigation plan will have to be developed by the permit applicant and approved by DES as a condition of a large groundwater withdrawal permit if it is determined that a large withdrawal may adversely impact existing water users. The mitigation plan would include a schedule for monitoring and reporting environmental measurements to DES, and threshold or "trigger" values at which specific mitigation measures must be implemented. The mitigation plan may also include a schedule and process for replacing sources of water if it is determined that existing water users have been adversely impacted by the withdrawal. A mitigation plan will contain all of the provisions and criteria that a typical well owner response policy contained. Furthermore, DES can modify the mitigation plan as necessary to further ensure that adverse impacts do not occur.

The specific regulations that describe the applicant's obligations for developing and implementing a mitigation plan, which is analogous to a "Well Owner's Response Policy," is specified in *Env-Ws 388.20 Impact Monitoring and Reporting Program*; *Env-Ws 388.21 Procedures and Criteria for Impact Mitigation*; and *Env-Ws 388.22 Procedures and Criteria for Source Replacement*. Mitigation plans, if needed, generally are developed by the applicant and approved by DES after withdrawal testing, as part of the final report that is prepared pursuant to Env-Ws 388.17. DES will provide local representatives with information regarding the development of mitigation plans, and will fully consider relevant technical suggestions or comments provided by the public at all times.

17) Our main interest and concern about the withdrawal application is the potential to impact our public water supply wells located near the large withdrawal site. Is there anything the DES can do to address our concerns?

DES may require that the applicant include the monitoring of public water supply wells, depending upon the proximity of the wells to the large withdrawal site and the hydrogeologic setting, as part of the withdrawal test in accordance with Env-Ws 388.09(d). As described in Question 2, above, a new large groundwater withdrawal cannot adversely impact a public water supply well.

Monitoring & Adverse Impacts

18) If adverse impacts associated with groundwater quantity or quality occur as the result of proposed withdrawal, who is financially responsible for mitigating the adverse impacts?

One of the requirements of the large groundwater withdrawal permitting process is to complete an impact assessment prior to allowing an applicant to develop a new large groundwater withdrawal. However, should an adverse impact still occur, the permittee is financially responsible for mitigating any adverse impact that occurs as a result of a large groundwater withdrawal. The process for mitigating impacts is described in Env-Ws 388.21.

The permittee and DES are responsible for investigating any claims of adverse impacts as described in Env-Ws 388.19, 388.20, and 388.21. The burden of proof for determining the cause of adverse impacts is placed upon the permittee or large groundwater user. DES will determine whether the efforts to investigate, and conclusions developed by the large groundwater user are adequate and accurate when investigating the potential occurrence of adverse impacts. DES may also conduct its own investigation in conjunction with or independent of the large groundwater withdrawal user.

19) Who is responsible for maintaining an environmental monitoring program during withdrawal testing and after a permit is issued? Will independent testing be conducted by the state? Will this data be readily available to the public?

The permittee is responsible for maintaining the environmental monitoring program under the oversight of engineers and geologists licensed in the State of New Hampshire. DES will provide oversight at selected monitoring events to ensure the work is being done as proposed and in a technically acceptable manner. Environmental monitoring data is analyzed for trends, which can be reconciled with artificial stresses and climatic conditions. Therefore, data accuracy can be verified by periodic oversight, and any errors would become evident at this time or by reviewing the entire dataset. It is generally possible to "spot" erroneous environmental measurements, as data will not conform to logical trends. Environmental monitoring program reports submitted to DES will be made available to the public for review upon request.

20) How far away from the site will the environmental monitoring program extend?

The environmental monitoring program must extend as far as necessary to fully assess potential impacts that may occur as a result of the proposed withdrawal. The extent of the area that needs to be monitored may be revised based on results of the withdrawal testing program.

Typically, applicants propose a scope of work for the withdrawal test program in the Preliminary Application, and DES then comments on the adequacy of this proposal, which may be based in part on relevant public comments. The applicant will revise the scope of work for the withdrawal test in response to DES's comments, and then implement the test. Results of the withdrawal test will become the basis for the location and frequency of long-term environmental monitoring, if needed. At some groundwater withdrawal sites in New Hampshire, monitoring has extended up to 7,000 feet away from the site, but the majority of monitoring locations have been located within 500-3,000 feet of the site.

21) A seven to ten day withdrawal test is not adequate to assess whether adverse impacts may occur. How does the state evaluate whether adverse impacts may occur as the result of the proposed withdrawal given that a withdrawal test may not demonstrate the impacts that occur in response to long-term pumping or during drought conditions?

Large groundwater withdrawal regulations have been developed with the understanding that all potential adverse impacts that may be caused by a new large groundwater withdrawal operating for several years or during a drought period cannot be identified or completely understood during a seven to ten day withdrawal test. The regulations address the shortcomings inherent to withdrawal testing by requiring that a long-term environmental monitoring, reporting, and (where appropriate) mitigation program be developed and implemented, if needed. The purpose of the environmental monitoring and reporting program, which may be required as part of the permit, is to detect the occurrence of impacts before they become adverse as defined by RSA 485-C:21, V-c and to implement corrective action. DES typically reviews and approves an environmental monitoring, reporting, and mitigation program, if required, prior to a new large withdrawal permit being issued. However, the applicant may be required to develop or modify a mitigation program at any time following the issuance of a permit if necessary to account for unanticipated or changed conditions that cause an adverse impact. If adverse impacts occur as the result of the withdrawal, and adverse impacts cannot be properly mitigated, DES has the option to revoke the permit. Furthermore, the permittee is required to renew the permit every ten years.

22) It appears that DES relies upon the public to assess whether adverse impacts occur. However, the public does not have the resources to complete an adverse impact assessment. Furthermore, DES should review the applicant's data for accuracy.

The public is not responsible for assessing impacts. Rather, DES encourages public participation in the permitting process, participation that is critical for DES to fully understand local concerns and conditions.

For instance, although DES has limited data concerning the construction of private wells installed in New Hampshire after 1984, DES does not maintain data on private wells installed prior to that time. Moreover, the nature of water availability (yield) of existing private wells cannot be fully understood without local input. For example, do these wells go dry during certain months of the year, or is there an existing water quality problem? Another example of where local input is essential is the identification of rare or endangered species or of waste sites that are unknown to local or state officials.

DES is responsible for reviewing the applicant's data for accuracy, and will continue to do so. DES is responsible for assessing whether impacts may occur to any water user or environmental resource, and relies upon the public to ensure all relevant concerns have been identified. In the case that the public wishes to conduct its own, separate impact assessment, DES will consider any relevant technical information produced by these efforts.

23) If a permit is issued, and a water user believes they are being adversely impacted by the new large groundwater withdrawal, who has the responsibility for the burden of proof?

The burden of proof belongs to the permittee. If a water user reports the occurrence of an adverse impact to DES, DES will review the information and may require the permittee to collect additional information to determine whether the large withdrawal is causing the impact.

24) What safeguards will be in place to protect surrounding homes if withdrawal testing occurs during periods or seasons of high rainfall?

Seasonal precipitation variations are included in the analysis of the withdrawal test data. As part of the withdrawal test, precipitation data and weather condition observations must be collected for the duration of the withdrawal testing program and incorporated into the analysis of the withdrawal test data. Additionally, the withdrawal testing program must be designed to verify that the withdrawal will not result in adverse impacts even under 180 days of continuous operation at the maximum volumes requested in the permit application without recharge from rainfall or snowmelt.

Surface Water & Wetlands

25) Our town has several lakes and streams. Might the proposed large withdrawal lower the level of the lakes and streams (and consequently home values)? Also, drainage from the withdrawal site flows towards extensive wetlands. If there is a continued high groundwater withdrawal rate during a drought period, these wetlands could be severely influenced. Is the DES able to limit high volume pumping in a sustained dry period?

The potential for adverse impacts of the withdrawal on water resources, including lakes, streams, and wetlands, is assessed and water levels maybe monitored as part of the withdrawal test. The withdrawal test must be designed to estimate the effect of the withdrawal under conceptual hydrologic model withdrawal conditions, that is, 180 days of continuous operation at maximum rates without recharge from rainfall or snowmelt. Additional requirements would apply should results of the withdrawal test indicate a potential for adverse impacts to water resources.

An impact description must be included in the final report and must be based on results from the withdrawal test and a refined conceptual hydrologic model according to Env-Ws 388.16(d). The impacts must be quantified to the extent necessary to: (1) Determine whether adverse impacts might occur; (2) If adverse impacts potentially might occur, develop a monitoring and reporting program to accompany the operation of the proposed withdrawal to provide data that assesses whether adverse impacts are occurring or will occur; (3) Develop mitigation measures as required by Env-Ws 388.21 for adverse impacts that might occur; or (4) Determine a revised permanent production volume for the withdrawal if necessary, to ensure that adverse impacts as specified by RSA 485-C, V-c do not occur as described in Env-Ws 388.16(e).

26) The pump test is being conducted in the winter, when accurate determination of surface water impact would be very different than if the test were conducted in the summer, when the proposed groundwater withdrawal would be occurring. This raises the question of the impact of the proposed pumping on surface water during the summer, which should be assessed.

If the test is conducted while surface water is frozen, DES requires that the applicant use a method to measure surface water levels that is not affected by freezing. Regardless of the season of the year, an applicant must adhere to Env-Ws 388.06(h), that is conceptual hydrologic model pumping conditions must be based upon the withdrawal operating continuously for 180 days at maximum withdrawal amounts without groundwater recharge from rainfall or snowmelt. A permittee must follow the impact monitoring and reporting program when available information, including work completed in accordance with Env-Ws 388, is not sufficient to verify that adverse impacts from the large withdrawal will not occur, provided the available information does not suggest that an impact is irreversible, or will occur immediately.

Additionally, an impact monitoring and reporting program is required when it is necessary to ensure that impact mitigation identified in Env-Ws 388.21 is effective in preventing adverse impacts from the withdrawal as required in Env-Ws 388.20(a).

27) What is considered an "adverse impact" if the large withdrawal impacts a wetland?

An adverse impact to wetlands is considered "A net loss of values for submerged lands under tidal and fresh waters and its wetlands as set forth in RSA 482-A." This includes ensuring that there are no net loss in the functions and values of wetlands.

Water Quality

28) If groundwater at a property in the immediate vicinity of a proposed withdrawal site is contaminated, but has not been investigated to date, how will the large groundwater withdrawal permitting process ensure that the proposed withdrawal does not cause any contamination at this property to migrate or move further into the aquifer? Does the state perform an investigation of this contaminated property?

Whenever DES receives a creditable report of improper disposal of hazardous waste or other groundwater contamination, the subject site is referred to DES's Waste Management Division for investigation. The investigation may include interviewing people with information about the site, and possibly collecting soil and/or groundwater samples for analysis. DES coordinates internally to ensure that the possibility of contaminated groundwater movement from this site is addressed. All known sources of contamination must be accounted for in the design of the withdrawal test required by the large groundwater withdrawal rules.

29) If an applicant's wells are hydraulically connected to the local wetlands, I am concerned that a large withdrawal may pull water from the wetlands into the aquifer. Water that originated from wetlands often has a high iron and manganese content. If this happens, residential water wells may experience detrimental changes in water quality. How will the large groundwater withdrawal permitting process address this problem?

If the proposed large withdrawal draws water from wetlands, then there are two issues that have to be addressed. The first has to do with impacts to wetlands and that issue was discussed in Question 26.

The second issue has to do with changes to water quality. If the withdrawal is determined to 1) Draw water from the wetlands; and 2) Detrimentally impact water quality of existing water users, then the withdrawal would not be allowed or would have to be modified such that these types of impacts do not occur.

30) What safeguards will be in place to protect homes surrounding a golf course from the effects of contaminants, including airborne contaminants, from fertilizers and pesticides – short and long term?

Air quality and water quality associated with the proposed land use are not subject to this permitting process. However, the use of fertilizers and pesticides is subject to the rules and regulations of the New Hampshire Department of Agriculture – Bureau of Markets and Division of Pesticides Control, respectively. For more information please call Wendy Chapley at (603) *271-3550.*

31) I am concerned that the treatment process employed at the facility will generate residuals that are discharged to the groundwater. How does DES address the discharge of wastes to the groundwater?

All discharges of non-domestic wastewater to the ground must be registered with, and in some cases permitted, by DES. In all cases, state regulations prohibit any discharge of non-domestic wastewater containing regulated contaminants above ambient groundwater standards. If a groundwater discharge is proposed for the site, it will only be allowed if it does not adversely impact water quality on or off the site.

Planning & Policy

32) Our town has had planning concerns regarding development and the effect new buildings and paved areas would have on groundwater and other water resources. Do these concerns relate to the proposed large withdrawal?

In areas where significant development is anticipated to occur, DES incorporates a condition in the permit that ensures water levels in the aquifer(s) are maintained at appropriate levels to meet the water supply needs of others. This is generally accomplished by the issuance a variable withdrawal rate permit that relates the permitted pumping volume for large groundwater withdrawal users with the water levels in the aquifer.

Other Legal Considerations

33) Who owns the Groundwater? What is the Public Trust? Is groundwater protected as part of the Public Trust? If so, is DES required to complete a Public Trust analysis and determine a proposed project will not interfere with Public Trust rights prior to issuing a large groundwater withdrawal permit?

Several questions often arise when groundwater withdrawals are considered, among them “Who owns groundwater?” and “Which laws govern groundwater withdrawals?”

Groundwater is a shared resource in New Hampshire. Therefore the question of “who owns groundwater” may better or more practically be restated as who has the right to use water and how much? New Hampshire’s water rights system is based on common law (law that is based on historic court decisions opposed to written codified law). New Hampshire’s common law with respect to water use is governed by the doctrine of reasonable use. “Reasonable use” is generally taken to mean that one property owner’s water use may not unreasonably interfere with the water use of another property owner, regardless of which use was established first. Some of the basic principles include, “leaving some for your neighbor” and “don’t unreasonably affect your neighbor or the public.” “Reasonable use” is a mixed question of fact and law, and the standard may change over time – so what was once reasonable may over time become unreasonable.

When you think of laws, you may think of the written and compiled statutes (RSAs), but there is also a common law background that consists of decisions made by judges on particular cases. Additionally, there are also doctrines developed over time, many of them developed in England prior to the creation of this country that have been passed onto the legal systems of the states. One doctrine, the Public Trust Doctrine, most often considered when protecting natural resources are considered. The common law and doctrines exist side by side with the written RSAs.

The common law is not an overall regulatory scheme. Whereas a regulatory system often has an overall goal such as protecting water resources, the goal of common law is to ensure justice occurs in any particular case. Justices make written decisions based on facts presented in each particular case. Lawyers then extrapolate principles from the decisions which they will then use to argue other cases. Therefore, common law is very different from statutory law where the requirements of law are written. It is important to note that RSA 485-C does not replace common law with respect to water rights; rather, common law coexists with the statute. This means that landowners developing a groundwater withdrawal of any amount have a right to reasonable use of the water under common law, that large new groundwater withdrawals are regulated under RSA 485-C, and that civil cases may be brought to the courts to resolve conflicts when the water rights of another land owner are unreasonably impacted by any withdrawal.

"Public Trust Doctrine" is a doctrine that among other things is relevant to water regulation. The Public Trust Doctrine states that "certain waters are held in trust by the state for the benefit of the public." The public is literally acting as a trustee, and the state owns the water. The underlying rationale is that certain things including public waters cannot be privately owned. The doctrine originated back to Roman times and then to England, originally focused on navigation. In England, the Public Trust Doctrine only applied to waters that were tidal or navigable waters connected to tidal waters. Currently, the Public Trust Doctrine in New Hampshire is much broader. There has been a whole series of New Hampshire Supreme Court decisions in the 19th and 20th centuries. It is real clear now that rivers that are navigable or with other useful purposes are part of the public trust waters. The nature of what is protected under the Public Trust Doctrine has become broader over time. Originally, the Public Trust Doctrine only applied to navigation, but now fishing, swimming and other types of recreation are considered public trust uses. To date, there has been no binding legal precedent establishing that groundwater is considered to be part of the public trust in New Hampshire. However, given the state of knowledge about the need to manage water resources for the collective good, as well as the potential impacts of groundwater depletion on waters that clearly are covered by the Public Trust Doctrine, the NH Department of Justice has taken the position that groundwater, taken as a whole, falls into a category of things that by their nature, cannot be privately owned and thus should be considered as part of the Public Trust.

DES, as an administrative agency, does not have authority to apply common law or Public Trust Doctrine requirements on persons unless state statutes (RSAs) specifically impose a duty and directive to do so. The Groundwater Protection Act (RSA 485-C) does stipulate that new large groundwater withdrawals cannot cause adverse impacts to water users and water resources. The Act defines qualitatively and quantitatively what an adverse impact is (see Question 2).

In both a common law and doctrine system, people enforce their water right by taking a court action against another party. One approach in court to take is to file a nuisance action. There are two types of nuisances, a public and a private nuisance. A public nuisance is a substantial or unreasonable interference with the rights of the general public. By statute (RSA 21-M:10) and the common law, the NH Department of Justice could take court action utilizing the Public Trust Doctrine if a public nuisance is occurring. A private nuisance is a substantial or unreasonable interference with a person's use or enjoyment of their own property. When a private nuisance occurs, the person affected can cite common law to take action against the party causing the nuisance.

34) How will the large groundwater withdrawal permitting process address regional and local concerns?

The large groundwater permitting process administered by DES assesses the potential for adverse impact to both water users and water resources in the vicinity of the site, and regionally, to water users and water

resources upgradient and down gradient of the proposed withdrawal site.

RSA 485-C:21 stipulates the area around a proposed large groundwater withdrawal that must be assessed for impacts. Specifically, RSA 485-C:21 stipulates that a potential impact area that includes all of the following must be delineated for a proposed withdrawal site:

(a) The maximum extent of the cone of depression created by the withdrawal with the assumption of a conceptual hydrological model condition of 180 days of continuous pumping at maximum volumes without recharge from rainfall or snowmelt;

(b) The maximum extent of the recharge area for the withdrawal with the assumption of a conceptual hydrologic model condition of 180 days of continuous pumping at maximum volumes without recharge from rainfall or snowmelt; and

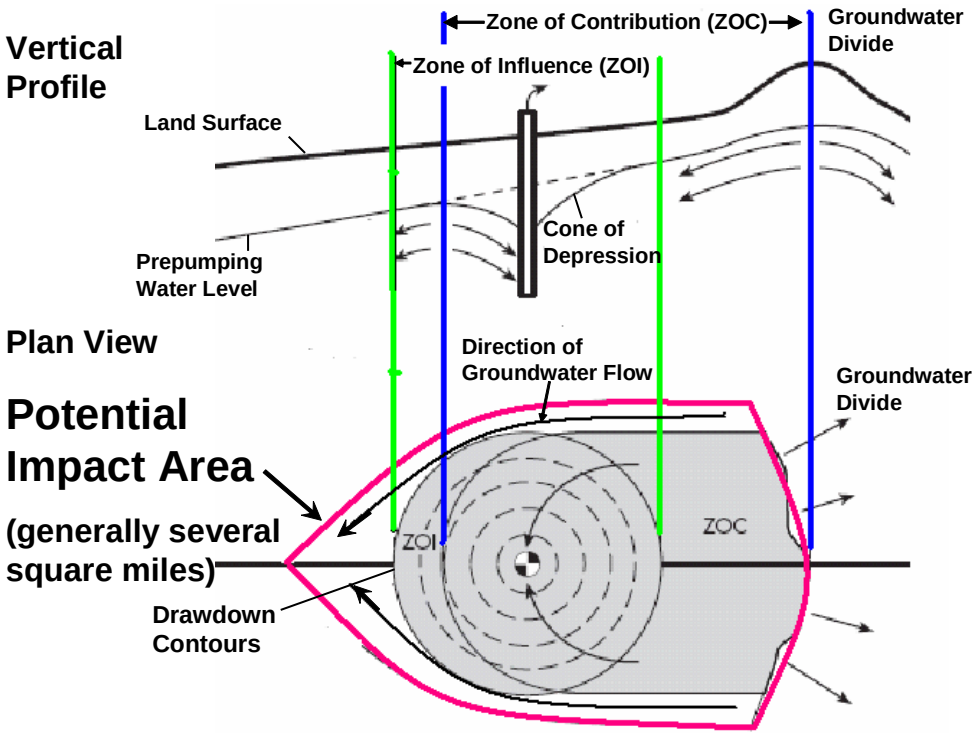
(c) The downgradient area of the withdrawal which shall include:

(1) An existing or new delineation of a potential impact area large enough so that the size of the entire study area for the withdrawal is at least 10 times the size of the recharge area for the withdrawal;

(2) An existing or new delineation of a watershed where the amount of water crossing the downgradient boundary, that is, leaving the study under current conditions, is at least 10 times the amount to be withdrawn; or

(3) An alternative method of estimating a potential impact area provided it relies on conservative assumptions, is demonstrated as appropriate for the site by test results, and is clearly explained and justified.

A graphic showing the components of a "potential impact area" is shown below.



DES will coordinate and communicate with regional and local representatives to schedule public information meetings throughout the permitting process. Additionally, regional and local representatives may submit written comments and concerns to DES for consideration as part of the permit application review.

35) I understand that an applicant is required to conduct public notification using the preliminary permit application and again after the final report is submitted. If a public hearing is requested within 15 days after the public notification period, DES will conduct a public hearing within 30 days. Is it possible for DES to hold additional meetings beyond the two public comment periods?

Yes. DES is available to participate in public information meeting(s) to discuss the final report as part of the review process. DES will hold public information meeting(s) throughout the permitting process based upon public interest.

36) What control or authority do local governments have regarding the proposed large groundwater withdrawal?

State law (RSA 485-C:20 Effect on Local Ordinances) states the following:

"Nothing in this chapter shall be deemed to preempt the authority of municipalities, under other statutes, to enact local ordinances or regulations affecting groundwater, **other than groundwater withdrawals;** provided, however, that requirements imposed under this chapter shall be considered as minimum."

This law provides DES with the sole authority to regulate groundwater withdrawals, however other aspects of the project such as land use zoning are regulated at the local level. It should be noted that since the large groundwater withdrawal permitting program was established in 1998, the majority of all new large groundwater withdrawal permit applications associated with bottled water or golf courses have required significant zoning variances from the local government.

The only instance where an applicant may not need to comply with local ordinances or zoning is when a public utility proposes a new project. A public utility which uses or proposes to use a structure which does not comply with local zoning or ordinances, may petition the public utilities commission pursuant to RSA 674:30, III to be exempted from the operation of any local ordinance, code, or regulation. The public utilities commission, following a public hearing, may grant such an exemption if it decides that the present or proposed situation of the structure in question is reasonably necessary for the convenience or welfare of the public and, if the purpose of the structure relates to water supply withdrawal, the exemption is recommended by the department of environmental services.

37) Is it true that if a groundwater withdrawal is used to export water internationally or if an applicant's business is owned by international interests, that state regulations will be superceded by a number of different international trade agreements?

The NH Department of Justice found in 2002 (see www.des.nh.gov/dwspp/AG_USASprings.pdf) International trade law obligations —including the provisions of the North American Free Trade Agreement (NAFTA), and World Trade Organization (WTO) agreements, including the General Agreement on Tariffs and Trade (GATT) do not prevent DES or the State of New Hampshire from taking measures to protect New Hampshire's water resources. Trade agreements allow for the protection of environmental resources

so long as there is no discrimination by decision makers against persons from other countries in their application, and so long as water management policies are clearly articulated and consistently implemented so that undue or unanticipated expectations are not created throughout a permitting process. New Hampshire is not compelled by trade laws to endanger the waters of the state.

The public, however, remains deeply concerned that international trade law could affect the protection of New Hampshire's water resources. For this reason, DES is working with Senate Bill 155 Commission Study Groundwater to seek additional information from the NH Department of Justice pertaining to the international trade of all natural resources (including water). Additionally, during the 2007 legislative session, DES supported the formation of the SB 162 Commission to Study International Trade to further explore and address this issue.

For Additional Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.state.nh.us or visit our website at www.des.nh.gov/dwgb. All of the bureau's fact sheets are on-line at www.des.nh.gov/dwg.htm.

Note: This document is accurate as of March 2008. Statutory or regulatory changes, or the availability of additional information after this date may render this information inaccurate or incomplete.